REMARKS

This proposed amendment is responsive to the Office Action mailed July 11, 2007, which was made final. Applicants respectfully request entry of this Proposed Amendment, and ask for reconsideration and allowance of the claims as so amended.

Status of the Claims

Claims 2-5, 10, 11, 17, 18, 20, 21, 27, and 28 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Chiao, U.S. Patent No. 6,048,315 (hereinafter "Chiao") in view of Gersheneld et al., U.S. Patent No. 5,914,701 (hereinafter "Gersheneld").

Claims 7-9 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Chiao in view of Gersheneld in further view of Nappholtz, U.S. Patent No. 5,113,869 (hereinafter Nappholtz).

Claim 22 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Chiao in view of Gersheneld in further view of Kinast, U.S. Patent No. 5,995,858 (hereinafter "Kinast").

Claim 24 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Chiao in view of Gersheneld in further view of Abraham, U.S. Patent No. 6,407,987 (hereinafter "Abraham").

Further consideration of the Chiao reference

The present Office Action has maintained the claim rejections under the proposed combination of Chiao and Gersheneld as the primary references. Additionally, Popovic, "Spreading Sequences for Multicarrier CDMA Systems", IEEE Trans. on Comm. 47(6), PP. 918-26 (1999) is cited as evidence that the pairs of complementary Golay sequences of Chiao are spread spectrum signals.

The cited Popovic reference discloses, in the context of spreading sequences for multicarrier CMDA communication systems:

> Another family of spreading sequences which might be attractive for the MC-SS systems consists of the Golay complementary sequences. Any Golay complementary

> sequence produces an MC-SS waveform with the crest factor always less than or equal to 6 dB.

Popovic at page 922, 1st column, where "MC-SS" is elsewhere in the article identified as "multi-carrier spread spectrum".

Chiao does not employ Golay complementary sequences as MC-SS waveforms. Rather, Chiao uses pairs of Golay complementary sequences in the ultrasound context, to perform pulse compression. See, e.g. col. 5 lines 1-13.

Applicants have performed additional literature respective to the use of Golay sequences in the ultrasonic imaging arts to provide pulse compression, and have identified Nowicki et al., "On the Application of Signal Compression usin Golay's Codes Sequences in Ultrasound Diagnostic", Archives of Acoustics 28, pp. 313-324 (2007), which is enclosed. Nowicki published several years after the filing of the present application, and Applicants do not recognize or submit Nowicki as prior art, but rather as illuminative of the pulse compression technique of Chiao employing pairs of complementary Golay sequences.

As described at Nowicki pages 316-318 with particular reference to Fig. 3, the concept is that each of the complementary pair of Golay sequences produces a main pulse with side lobes. These appear to be analogous to the "range lobes" of Chiao, where the terminology of Chiao is apparently borrowed from radar rangefinding technology. The side lobes are of opposite sign in the pair of complementary sequences. When added together, the side lobes cancel leaving a sharp peak with no side lobes (i.e., with no range lobes in the terminology of Chiao).

Neither Chiao nor Nowicki mention spread spectrum or spread spectra. If any spreading of the spectrum is occurring in the pulse compression of Chiao, it would seem to be an unintended side effect of the pulse compression.

Popivic, relating to the communications arts rather than the ultrasonic imaging arts, states that "[a]ny Golay complementary sequence produces an MC-SS waveform with the crest factor always less than or equal to 6 dB." At most, this indicates that any Golay complementary sequence provides some spreading of the spectrum. Indeed, insofar as the Fourier transform of a pure sinusoidal pulse is a delta function, any modification of the pure sinusoidal pulse produces some spreading of

the spectrum. Thus, it is possible (although Chiao nowhere states it and Applicants do not concede the point) that the pulse compression of Chiao using complementary pairs of Golay sequences may produce some spreading of the spectrum.

The claim amendments

In view of the foregoing, Applicants have amended the claims to specify the spread spectrum in more quantitative fashion.

Claim 17 has been amended to call for means for transmitting spread spectrum signals spread across a wide spectrum of frequencies in a measurement band of at least approximately 1-2 kHz. **Claim 28** has been amended to call for a transmitter for conveying an input spread spectrum signal to a patient in a spread measurement band of at least 1-2 kHz. These amendments are supported in the original specification at least at page 8 lines 1-3, where illustrative measurement bands of 1-2 kHz and 30-60 kHz are specified.

Claim 20 has been amended to call for a signal transmitter which transmits a spread spectrum signal to a medical patient via at least some electrodes, the signal transmitter including a random signal generator configured to generate a random signal used in generating the spread spectrum electrical input signal within a frequency band ranging from 30 to 60 kHz. New **claim 29** depends from claim 28, and calls for the transmitter to convey the input spread spectrum signal to the patient in a spread measurement band of at least approximately 30-60 kHz.. These amendments are supported in the original specification at least at page 8 lines 1-3 and page 9 lines 9-22.

The amended claims distinguish patentably over the references

Regarding **claim 17**, Chiao relates to ultrasonic imaging employing orthogonal complementary Golay sequences for pulse compression. Even if sequences produce some spreading of the spectrum as a side effect of the pulse compression (a point not conceded by Applicants), Chiao does not disclose or fairly suggest means for transmitting spread spectrum signals spread across a wide spectrum of frequencies in a measurement band of at least approximately 1-2 kHz. Moreover, Chaio uses

Golay sequences for pulse compression, and fails to recognize any alleged spread spectrum characteristics of these signals.

Gersheneld uses spread spectrum small-current electrostatic field coupling for the purpose of sensing a person's position for control tasks. (Gersheneld col. 2 lines 20-25), but not for a spread spectrum measurement device for measuring a desired physiological condition of a patient.

Accordingly, neither Chiao nor Gersheneld recognize the benefit of using a spread spectrum signal in spread spectrum measurement device for measuring a desired physiological condition of a patient, and hence neither Chaio nor Gersheneld provide any motivation to modify the complementary Golay sequences of Chaio to comprise spread spectrum signals spread across a wide spectrum of frequencies in a measurement band of at least approximately 1-2 kHz. Accordingly, claim 17 and claims 2-5, 7-11, and 24 that depend therefrom are respectfully submitted to patentably distinguish over the cited references, and Applicants respectfully request allowance of claims 2-5, 7-11, 17, and 24.

Claim 28 calls for a spread spectrum physiological condition measurement device including a transmitter for conveying an input spread spectrum signal to a patient in a spread measurement band of at least approximately 1-2 kHz. Gersheneld does not relate to a physiological condition measurement device. Chiao relates to a physiological condition measurement device (namely an ultrasonic imaging apparatus) but does not disclose or fairly suggest a transmitter for conveying an input spread spectrum signal in a spread measurement band of at least 1-2 kHz to a patient, much less the subject matter of **claim 29** calling for the transmitter to convey an input spread spectrum signal in a spead measurement band of 30-60 kHz. Accordingly, claims 28 and 29 as well as claims 18, 21, and 22 that depend from claim 28 are respectfully submitted to patentably distinguish over the cited references, and Applicants respectfully request allowance of claims 18, 21, 22, 28, and 29.

Claim 20 calls for a spread spectrum medical diagnostic measurement device including a signal transmitter which transmits a spread spectrum signal to a medical patient via at least some electrodes, the signal transmitter including a random signal generator configured to generate a random signal used in generating the spread spectrum electrical input signal within a frequency band ranging from 30 to 60 kHz.

The orthogonal complementary Golay sequences of Chiao are not generated using a signal transmitter including a random signal generator, and Chiao does not disclose or fairly suggest generating a spread spectrum electrical input signal with a measurement band of approximately 30-60 kHz. Gersheneld discloses spread spectrum signals employing a transmitter including a pseudorandom code generator (e.g., Gersheneld col. 2 lines 20-23), but is wholly unrelated to a spread spectrum medical diagnostic measurement device, and moreover does not disclose or fairly suggest generating the spread spectrum electrical input signal with a measurement band of approximately 30-60 kHz. Accordingly, claim 20 and claim 27 depending therefrom are respectfully submitted to patentably distinguish over the cited references, and Applicants respectfully request allowance of claims 20 and 27.

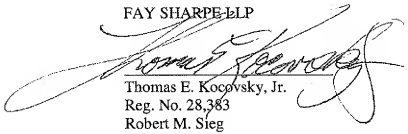
CONCLUSION

It is submitted that the claims patentably distinguish over the references of record. It is further submitted that all claims meet the statutory requirements and are otherwise in condition for allowance. An early allowance of all claims is requested.

In the event that personal contact is deemed likely to be advantageous to the disposition of this case, the Examiner is authorized and requested to telephone the undersigned at (216) 861-5582.

Respectfully submitted,

FAY SHARPE LLP



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